SUMMARY ON

ENVIRONMENTAL IMPACT ASSESSMENT

REPORT

OF

Avinash Energy Private Limited

[Greenfield project comprising of Establishment of 2 x 95 TPD DRI Kilns for production of 62,700 TPA of Sponge Iron, 5 x 10 T Induction Furnaces for production of 1,65,000 TPA MS Billets / MS Ingots, Rolling Mill of 1,50,000 TPA for production of TMT Bars / Structural Steels / Rolled Products and Power Plant 10 MW (WHRB – 5 MW & FBC – 5 MW)]

at

Mohra & Hirmi Villages, Simga Tehsil,
Baloda Bazar-Bhatapara District, Chhattisgarh

Submitted to

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD
Chhattisgarh

1.0 PROJECT DESCRIPTION

Avinash Energy Pvt. Ltd. have proposed to establish a Steel plant, a Greenfield Project comprising of Establishment of 2 x 95 TPD DRI Kilns for production of 62,700 TPA of Sponge Iron, 5 x 10 T Induction Furnaces for production of 1,65,000 TPA MS Billets / MS Ingots, Rolling Mill of 1,50,000 TPA for production of TMT Bars / Structural Steels / Rolled Products and Power Plant 10 MW (WHRB – 5 MW & FBC – 5 MW) at Khasra nos. 146, 147, 148, 149, 150, 168/1,2,3&4, 169, 170/1,2,3,4 & 5, 171, 172/1,2,3,4,5,6,7,8,9&10, 173, 174/1 & 2, 175, 176, 177/1 & 3, 178, 179/1 & 2, 180, 18 1/1,2 & 3, 182/1 & 6, 183, 184 of Mohra Village & 872/2, 856, 855/3 of Hirmi Village, Simga Tehsil, Baloda Bazar-Bhatapara District, Chhattisgarh.

As per the Ministry of Environment, Forest & Climate Change, New Delhi, EIA notification dated 14th September, 2006 & its subsequent amendments, all the Sponge Iron units (< 200 TPD) & non –toxic secondary metallurgical processing industries are falling under Sl. No. 3 (a), classified as Category 'B' for the grant of Environmental Clearance at State Level. The State Expert Appraisal Committee (SEAC), Chhattisgarh has accorded Terms of Reference (TOR) for the proposed project vide letter no. 835/Industry/Baloda-Bhata/900 Atal Nagar dt. 28th September 2019.

Pioneer Enviro Laboratories & Consultants Private Limited, Hyderabad, which is accredited by NABET, Quality Council of India, for preparing EIA report for Metallurgical Unit, have prepared Environmental Impact Assessment (EIA) report for the proposed project by incorporating the TOR approved by Ministry of Environment, Forests & Climate Change, New Delhi. The report contains detailed description of the following:

- Characterization of status of environment with in an area of 10 km radius from the plant for major environmental components including air, water, noise, soil, flora, fauna and socio-economic environment.
- Assessment of air emissions, liquid waste and solid waste from the proposed project along with the noise level assessment.
- Environmental Management Plan comprising of emission control measures proposed to be adopted in the proposed project, solid waste management, Greenbelt development.
- Post Project Environmental Monitoring & Budget for Environmental Protection Measures.

1.1 ENVIRONMENTAL SETTING WITHIN 10 Km. RADIUS OF THE PLANT SITE

The following is the environmental setting within the 10 Km. radius of the Plant site:

Table No. 1.1 : ENVIRONMENTAL FEATURES WITHIN 10 KM. RADIUS OF PLANT

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
1.	Type of Land	Present land use is scrub land and same will be converted for Industrial Purpose.
2.	Type of Land (Study Area)	As per LULC the land use within 10 Km. is as follows: Settlements – 3.1 %; Industrial Area – 2.4 %; Tank / River / Reservoir / Major canal etc. – 8.1 %; Scrub Forest – 4.8 %; Single crop – 62.1 %; Double crop – 4.9 %; Plantation – 0.2 %; Land with scrub – 9.7 %; Land without scrub – 2.1 %; Mining area – 2.6 %.
3.	National Park/ Wild life sanctuary / Biosphere reserve / Tiger Reserve / Elephant Corridor / migratory routes for Birds	Nil
4.	Historical places / Places of Tourist importance / Archeological sites	Nil
5.	Industrial areas / cluster as per MoEF&CC Office Memorandum dated 13thJanuary 2010 and its subsequent amendments and NGT order vide dt. 10th July 2019	Nil
6.	Defence Installations	Nil
7.	Nearest village	Mohra – 1.2 Km.
8.	No. of Villages in the Study Area	54
9.	Nearest Hospital	Hirmi village – 2.8 Kms.
10.	Nearest School	Mohra village – 2.1 Kms.
11.	Forests	No forest land is involved in the project site
12.	Water body	Mahanadi canal (1.5 Kms.), Kumhari Tank (3.5 Kms.), Banjari nala (3.2 Kms.), Kumhari Irrigation Channel (4.3 Kms.) and few water tank & ponds exists within 10 Kms. radius of the project site. No River / Stream passes through the proposed project site.
13.	Nearest Highway	Nil (SH # 9 – 20.0 Kms By Road)
14.	Nearest Railway Station	Nil (Tilda RS – 27.0 Kms. By Road)
15.	Nearest Port facility	Nil
16.	Nearest Airport	Nil (Raipur Airport – 42.0 Kms.)

S.No.	Salient Features / Environmental features	Distance w.r.t. site / Remarks
17.	Nearest Interstate Boundary	No interstate boundary within 10 Km radius of the plant site.
18.	Seismic zone as per IS-1893	Seismic zone – II
19.	R & R	Not applicable, as no habitation exists in the project site and Land is taken on lease.
20.	Litigation / court case is pending against the proposed project / proposed site and or any direction passed by the court of law against the project	Nil

Following is list of industries (Major) presently located within 10 Km radius of the site:

Table No.1.2 – List of Industries within 10 Kms. radius of the project site

S.No.	Name of Industry	Type of Industry
1.	M/s. Ultratech Cement (Hirmi)	Limestone Mines & Cement Plant
2.	M/s. Ultratech Cement (Rawan)	Limestone Mines & Cement Plant

1.2 Plant Configuration and Production Capacity

Following is plant configuration and production capacity proposed now

Table No.1.3 – Plant Configuration & Production Capacity

S.No.	Unit & Product		Plant Configuration (Production Capacity)
1.	DRI plants (Sponge Iron)		2 x 95 TPD (62,700 TPA)
2.	Induction Furnaces (MS Billets / MS Ingots)		5 x 10 T (1,65,000 TPA)
3.	Rolling Mill (TMT Bars / Structural Steels / Rolled Products)		1 x 500 TPD (1,50,000 TPA)
4.	Power plant (10 MW)	WHRB based (2 x 12 TPH)	5.0 MW
		FBC based (1 x 24 TPH)	5.0 MW

1.3 Raw Materials

The following will be the raw material requirement for the proposed project:

Table No.1.4 – Raw Material requirement

S.No.	Raw Material	Quantity (in TPA)	Sources	Distance (w.r.t. to Project Site)	Mode of Transport
1.	**For DRI Kilns (Sponge Iron) – 62,700 TPA**				

S.No.	Raw Material		Quantity (in TPA)	Sources	Distance (w.r.t. to Project Site)	Mode of Transport
a)	Iron ore		100320	Barbil, Orissa NMDC, Chhattisgarh	~ 500 Kms.	By rail & road (through covered trucks)
b)	Coal	Indian	81510	SECL, Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
		Imported	56430	Indonesia / South Africa / Australia	600 Kms. (from Vizag Port)	Through sea route, rail route & by road
c)	Dolomite		3135	Raipur	~ 100 Kms.	By road (through covered trucks)
2.	**For Induction Furnace (MS Billets) - 1,65,000 TPA**					
a)	Sponge Iron		1,37,000	Own generation & Purchased from Raipur	~ 100 Kms.	----- By Road (through covered trucks)
b)	Scrap		59,000	Raipur	~ 100 Kms.	By road (through covered trucks)
c)	Ferro Alloys		2,500	Raipur	~ 100 Kms.	By road (through covered trucks)
3.	**For Rolling Mill (TMT bars & Structural Steel) – 1,50,000 TPA**					
a)	Steel billets		1,60,500	Own generation	---	----
b)	LDO		7500 KL	Nearby HPCL / IOCL depots	~ 100 Kms.	Tankers
c)	Coal for Gasifier (Producer Gas – 9000 NM^3/Hr)	Indian	30,000	SECL, Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
		Imported	19,200	Indonesia / South Africa / Australia	600 Kms. (from Vizag Port)	Through sea route, rail route & by road
4.	**For FBC Boiler [Power Generation 5.0 MW]**					
a)	Indian Coal (100 %)		27,000	SECL, Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
	OR					
b)	Imported Coal (100%)		17,280	Indonesia / South Africa / Australia	600 Kms. (from Vizag Port)	Through sea route / rail route / by road
	OR					

S.No.	Raw Material		Quantity (in TPA)	Sources	Distance (w.r.t. to Project Site)	Mode of Transport
c)	Dolochar + Indian Coal	Dolochar	18,180	In plant generation	---	through covered conveyors
		Indian Coal	17,595	SECL, Chhattisgarh / MCL Odisha	~ 500 Kms.	By rail & road (through covered trucks)
	OR					
d)	Dolochar + Imported Coal	Dolochar	18,180	In plant generation	---	through covered conveyors
		Imported	7,875	Indonesia / South Africa / Australia	600 Kms. (from Vizag Port)	Through sea route / rail route / by road

1.4 Manufacturing Process

1.4.1 Sponge Iron (DRI)

Refractory lined rotary kilns will be used for reduction of iron ore in solid state. A central Burner located at the discharge end will be used for initial heating of the kiln.

Iron ore will be continuously fed into the kiln along with coal which has dual role of fuel as well as reductant. Dolomite will be added to scavenge the sulphur from the coal. A number of air tubes will be provided along the length of the kiln. The desired temperature profile will be maintained by controlling the volume of the combustion air through these tubes. The Carbon monoxide generated due to the combustion of coal, reduces the iron ore and converts it into sponge iron. The rotary kiln is primarily divided into two zones viz. the pre heating zone and the reduction zone. The preheating zone extends over 30 to 50 % of the length of the kiln and in this the moisture in the charge will be driven off and the volatile matter in the coal will be burnt with the combustion air supplied through the air tubes. Heat from the combustion raises the temperature of the lining and the bed surface. As the kiln rotates, the lining transfers the heat to the charge. Charge material, pre-heated to about 1000^0C enters the reduction zone. Temperature of the order of 1050^0C will be maintained in the reduction zone, which is the appropriate temperature for solid state reduction of iron oxide to metallic iron.

This hot material will be transferred to Heat exchanger. In Heat exchanger the material will be cooled to 160^0C. The cooler discharge material consists of sponge iron lumps, sponge iron fines and char. Magnetic and non-magnetic material will be separated through magnetic

separators and stored in separate bins. The hot flue gases will be taken to a Waste Heat Recovery Boilers and after heat recovery they will be treated in high efficiency ESP and discharged into the atmosphere through stack whose height will be in accordance with CPCB norms.

1.4.2 Steel Melting Shop

In Steel Melting Shop (SMS), Sponge Iron will be melted along with melting scrap and fluxes to make pure liquid steel and then to mould it in required size billets. The SMS will consist of Induction furnace, Ladles, Cranes & Continuous Casting Machine (CCM). There will be 5 nos. of Induction Furnaces in the SMS plant, each of 10 T capacity. Hot Billets will be produced in Continuous Casting Machine.

1.4.3 Rolling Mill

In the proposed project, there will 1 x 500 TPD reheating furnaces is proposed for the heating of billets. Furnace will be heated with Producer Gas / LDO. A bar and round mill will be installed in the plant to produce 500 TPD of TMT bars/ Structural steel.

1.4.4 Power Generation

1.4.4.1 Through WHRB Boiler

The hot flue gases from DRI kiln will pass through waste heat recovery Boiler to recover the heat and to generate 2 x 2.5 MW electricity. The gases after heat recovery will pass through ESP and then discharged through chimneys into the atmosphere for effective dispersion of emissions into the atmosphere.

1.4.4.2 THROUGH FBC BOILER

Coal (Imported / Indian) and dolochar will be used in FBC Boilers to generate 5.0 MW electricity. The flue-gases will be treated in high efficiency ESP and then discharged through stack into the atmosphere.

1.5 Water Requirement

Water required for the proposed project will be 320 KLD and will be sourced through Ground water resources. This includes Make-up water for DRI Kilns, Induction Furnaces, Rolling Mill & Power Plant. Air cooled condensers will be provided for power plant to reduce the water requirement. Application has been submitted to CGWA for NOC for drawl of Ground water. The following is the break-up of the water requirement for proposed project.

Table 1.5 – Water requirement break up

S.No.	Unit	Water Requirement (in KLD)
1.	DRI Kilns	50
2.	Induction Furnaces	60
3.	Rolling Mill	90
4.	Coal Gasifier	10
5.	Power Plant	100
	• Cooling tower makeup	48
	• Boiler makeup	36
	• DM plant regeneration	16
6.	Domestic	10
	Total	**320**

1.6 Waste Water Generation and its management

- There will be no effluent discharge from the DRI plant, SMS, Binding wire unit & Wire drawing mill as closed-circuit cooling system will be adopted.
- Air Cooled condensers will be provided in the power plant, which will be reduce the water consumption significantly. Hence wastewater generation will also be minimized.
- Effluent from Rolling Mill will be sent to settling tank & will be recycled through closed circuit cooling system.
- Effluent from Gasifier will have mainly phenolic compounds and will be used in After Burning Chamber of DRI kilns for quenching and to regulate the temperature of the hot flue gas in accordance with inlet requirement of waste heat recovery boiler.
- Effluent from power plant will be treated in ETP and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Sanitary waste water will be treated in STP.

The following will be the total wastewater & it's break-up.

Table No. 1.6 – Breakup of Wastewater Generation

S.No.	Wastewater Source	Generation (KLD)
1.	From DRI kiln	---
2.	From Steel melting shop	---
3.	From Rolling mill	---
4.	From Gasifier	2.0
5.	From Power Plant	38.0
	a) Cooling Tower blowdown	12.0
	b) Boilers blowdown	10.0
	c) D.M plant regeneration water	16.0
6.	Sanitary Wastewater	8.0
	Total	**48.0**

1.7 Wastewater Characteristics

Table No.1.7 - Characteristics of Waste Water

S.No.	PARAMETER	CONCENTRATION		
		R O Rejects	DM Plant Regeneration	Sanitary waste water
1.	pH	7.5 – 8.0	5.0 – 10.0	7.0 – 8.5
2.	BOD (mg/l)	--	--	200 – 250
3.	COD (mg/l)	--	--	300 – 400
4.	TDS (mg/l)	600	5000 – 6000	800 – 900
5.	Oil & Grease (mg/l)	--	10	--
6.	SS (mg/l)	350	--	--

2.0 DESCRIPTION OF ENVIRONMENT

Base line data has been collected on ambient air quality, water quality, noise levels, flora and fauna and socio-economic details of people within 10 km radius of the plant.

2.1 Ambient air quality

Ambient air quality was monitored for $PM_{2.5}$, PM_{10}, SO_2, NOx & CO at 8 stations including project site during December 2019 to February 2020. The following are the concentrations of various parameters at the monitoring stations:

Table No. 2.1 - Range of Concentration of various parameters

Parameter		Concentration
$PM_{2.5}$	:	17.8 to 38.9 µg/m^3
PM_{10}	:	29.5 to 68.4 µg/m^3
SO_2	:	5.2 to 16.6 µg/m^3
NO_X	:	5.4 to 23.6 µg/m^3

CO	:	304 to 1094 µg/m^3

2.2 Water Quality

2.2.1 Surface Water Quality

There is no major river flowing with in 10 Km. radius of the study area. Banjari nala is flowing at a distance of 3.2 Kms. However, there is no water available during the study period. Hence a sample from Kumhari Tank (3.5 Kms.) & from Baloda Branch Mahanadi Canal (1.5 Kms.) have been collected and analyzed for various parameters. No other surface water was available during study period. The analysis of samples shows that all the parameters are in accordance with BIS-2296 specifications.

2.2.2 Ground Water Quality

8 No. of ground water samples from open wells / bore wells were collected from the nearby villages to assess ground water quality impacts and analyzed for various Physico-Chemical parameters. The analysis of samples shows that all the parameters are in accordance with BIS: 10500 specifications.

2.3 Noise Levels

Noise levels were measured at 8 locations during day time & Night time. The noise levels at the monitoring stations are ranging from 41.91 dBA to 59.87 dBA.

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1 Prediction of impacts on air quality

The likely emissions from the proposed project are PM_{10}, SO_2, NOx & CO. The predictions of Ground level concentrations have been carried out using Industrial Source Complex (ISC-3) model. Meteorological data such as wind direction, wind speed, max. and min. temperatures collected at the site have been used as input data to run the model.

The predicted max. Incremental PM_{10} concentrations (24 hourly) due to the emissions from operation of proposed project will be **0.60 µg/m^3** at a distance of 1000 m from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in PM concentration due to the Vehicular emission will be **0.28 µg/m^3**.

Hence the total predicted incremental rise due to the emissions from operation of proposed project and due the vehicular emission will be **0.60 µg/m³ + 0.28 µg/m³ = 0.88 µg/m³.**

The predicted max incremental SO_2 concentrations (24 hourly) due to the emissions from operation of proposed project will be **8.0 µg/m³** at a distance of 1000 m from the stack in the down wind direction over the baseline concentrations.

The predicted max incremental NOx concentrations (24 hourly) due to the emissions from operation of proposed project will be **3.4 µg/m³** at a distance of 1000 m from the stack in the down wind direction over the baseline concentrations.

The predicted incremental rise in NOx concentration due to the Vehicular emission will be **2.2 µg/m³**.

Hence the total predicted incremental rise due to the emissions from operation of proposed project and due the vehicular emission will be **3.4 µg/m³ + 2.2 µg/m³ = 5.6 µg/m³**

The predicted incremental rise in CO concentration due to the Vehicular emission will be **1.4 µg/m³**.

Table No. 3.1 : NET RESULTANT MAXIMUM CONCENTRATIONS DUE TO PROPOSED PROJECT & DUE TO OTHER INDUSTRIES IN THE AREA

Item	PM_{10} (µg/m³)	SO_2 (µg/m³)	NO_X (µg/m³)	CO (µg/m³)
Maximum baseline conc. in the study area	68.4	16.6	23.6	1094
Maximum predicted incremental rise in concentration due to **AEPL**	0.60	8.0	3.4	--
Maximum predicted incremental rise in concentration due to **Vehicular Emissions from the proposed project**	0.28	--	2.2	1.4
Net resultant concentrations during operation of the plant	**69.28**	**24.6**	**29.2**	**1095.4**
National Ambient Air Quality Standards	**100**	**80**	**80**	**2000**

3.2 Prediction of impacts on Noise quality

The major sources of noise generation in the proposed project will be STG, boilers, compressors, DG set, etc. Acoustic enclosures will be provided to the STG. The ambient noise levels will be within the standards prescribed by MoEF vide notification dated 14-02-2000 under the Noise Pollution (Regulation & Control), Rules 2000 i.e. the noise levels will be less than 75 dBA during day time and less than 70 dBA during night time. **9.106 Ha.** of extensive greenbelt will be developed to further attenuate the noise levels. Hence there will not be any adverse impact due to noise on population in surrounding areas due to the proposed project.

3.3 Prediction of impacts on Water Environment

There will be no effluent discharge from the DRI plant & Induction Furnace as closed circuit cooling system will be adopted. Effluent from power plant will be treated and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development. Effluent from Rolling Mill will be sent to settling tank & will be recycled through closed circuit cooling system. Mill scales will be reused in SMS. Effluent from Gasifier will have mainly phenolic compounds and will be used in After Burning Chamber of proposed DRI kilns for quenching and to regulate the temperature of the hot flue gas in accordance with inlet requirement of waste heat recovery Boiler Sanitary waste water will be treated in STP. Hence there will not be any adverse impact on environment due to the proposed project.

3.4 Prediction of Impacts on Land Environment

The effluent will be treated to achieve SPCB standards. Zero effluent discharge will be adopted. All the required air pollution control systems will be provided to comply with CPCB / SPCB norms. All solid wastes will be disposed / utilized as per CPCB / SPCB norms. 9.106 Ha. of greenbelt will be developed as per guidelines. Hence, there will not be any adverse impact on land environment due to the proposed project.

3.5 Socio - Economic Environment

There will be further upliftment in Socio Economic status of the people in the area. Hence, there will be further development of the area due to the proposed project.

Due to this the economic conditions, the educational and medical standards of the people living in the study area will certainly move upwards which will result in overall economic development, improvement in general aesthetic environment and increase in business opportunities.

4.0 ENVIRONMENTAL MONITORING PROGRAMME

Post project monitoring will be conducted as per the guidelines of SPCB and MoEF&CC are tabulated below:

Table No. 4.1 - Monitoring Schedule for Environmental Parameters

S.No.	Particulars	Frequency of Monitoring	Duration of sampling	Parameters required to be monitored
1. Water & Waste water quality				
A.	Water quality in the area	Once in a month except for heavy metals which will be monitored on quarterly basis.	Composite sampling (24 hourly)	As per IS: 10500
B.	Effluent at the outlet of the ETP	Twice in a month	Grab sampling (24 hourly)	As per EPA Rules, 1996
C.	Sanitary waste water	Twice in a month	Grab sampling (24 hourly)	As per EPA Rules1996
2. Air Quality				
A.	Stack Monitoring	Online monitors (WHRB & FBC boiler stacks) Once in a month	---	PM PM, SO_2 & NOx
B.	Ambient Air quality (CAAQMS)	Continuous	Continuous	$PM_{2.5}$, PM_{10}, SO_2 & NOx
C.	Fugitive emissions	Once in a Month	8 hours	PM
3. Meteorological Data				
	Meteorological data to be monitored at the plant.	Daily	Continuous monitoring	Temperature, Relative Humidity, rainfall, wind direction & wind speed.
4. Noise level monitoring				
	Ambient Noise levels	Twice in a year	Continuous for 24 hours with 1-hour interval	Noise levels

5.0 ADDITIONAL STUDIES

No Rehabilitation and Resettlement is involved in the proposed project. Hence no R & R study has been carried out.

6.0 PROJECT BENEFITS

With the establishment of the proposed project employment potential will increase. Land prices in the area will increase. The economic status of the people in the area will improve due to the proposed project. Periodic medical checkups will be carried out. Top priority will be given to locals in employment.

7.0 ENVIRONMENT MANAGEMENT PLAN

7.1 Air Environment

The following are air emission control systems proposed in the proposed project:

Table No. 7.1 – Air Emission Control System

S.No.	Source	Stack Height	Control Equipment	Particulate emission at the outlet
1.	DRI kilns with WHRB's	57 (1 no.)	Electro Static Precipitators (ESP)	< 30 mg/Nm^3
2.	Induction Furnaces with CCM	30 (combined stack with twin flues)	Fume Extraction system with bag filters	< 30 mg/Nm^3
3.	FBC Boiler	42 (1 no.)	Electro Static Precipitator (ESP)	< 30 mg/Nm^3
4.	Rolling Mill	43 (1 no.)	---	< 30 mg/Nm^3

Note : Apart from the above Fume extraction system with bagfilters, dust suppression system, covered conveyers etc. will also be installed

The following air pollution control systems/ measures are proposed in the Plant:

- All conveyors will be completely covered with G.I. sheets to control fugitive dust.
- All bins will be totally packed and covered so that there will not be any chance for dust leakage.
- All the dust prone points material handling systems will be connected with de-dusting system with bag filters.
- All discharge points and feed points, wherever the possibility of dust generation is there a de-dusting suction point will be provided to collect the dust.
- The flue gases from the DRI kiln will pass through Waste Heat Recovery Boiler and after heat recovery the gases will be treated in High efficiency ESP to bring down the particulate

emission in the exhaust gases to below 30 mg/Nm^3 and then discharged into the atmosphere through a stack of 57 m height.

- The Fugitive emissions from the Induction furnaces will be sucked through hoods and will pass through a fume extraction system with bag filters and then the treated gases will be discharged into the atmosphere through a combined stack with twin flues, each of 30 m height will be provided to 2 x 10 T Induction Furnaces and a stack of 30 m height will provided to 1 x 10 T Induction Furnace for effective dispersion of emissions from Induction Furnaces. The outlet dust emission in the exhaust gases will be less than 30 mg/Nm^3. The dust will be pneumatically carried to covered bins.
- The flue gases will be discharged into the atmosphere through a stack of 43 m height for effective dispersion of emissions from Rolling Mill.
- The flue gases from the FBC boiler will be treated in a high efficiency Electrostatic Precipitator to bring down the particulate emission to less than 30 mg/Nm^3 and will be discharged through a stack of 42 m height for effective dispersion of emissions into the atmosphere.

7.2 Water Environment

- There will be no effluent discharge from the DRI plant & SMS as closed-circuit cooling system will be adopted.
- Air Cooled condensers will be provided in the power plant, which will be reduce the water consumption significantly. Hence wastewater generation will also be minimized.
- Effluent from Rolling Mill will be sent to settling tank & will be recycled through closed circuit cooling system.
- Effluent from Gasifier will have mainly phenolic compounds and will be used in After Burning Chamber of DRI kilns for quenching and to regulate the temperature of the hot flue gas in accordance with inlet requirement of waste heat recovery boiler.
- Effluent from power plant will be treated in ETP and after ensuring compliance with SPCB norms, it will be utilized for dust suppression, ash conditioning and for greenbelt development.
- Sanitary waste water will be treated in STP.

Effluent Treatment Plant:

pH of the boiler blowdown will be between 9.5 to 10.5. Hence, a neutralization tank will be constructed for neutralizing the boiler blow down. DM plant regeneration water will be neutralized in a neutralization tank. After neutralization these two effluent streams will be mixed with Cooling Tower blowdown in a Central Monitoring Basin (CMB). The treated effluent will be utilized for dust suppression, ash conditioning and for Green belt development. No effluent will be let out of the plant premises. Hence Zero discharge concept will be implemented. Sanitary waste water will be treated in STP.

7.3 Noise Environment

The major sources of noise generation in the proposed project will be STG, boilers, compressors, DG set, etc. Acoustic enclosure will be provided. All the machinery will be manufactured in accordance with MoEF&CC norms on Noise levels. The employees working near the noise generating sources will be provided with earplugs. The extensive greenbelt development proposed within the plant premises will help in attenuating the noise levels further. Noise barriers in the form of trees are recommended to be grown around administrative block and other utility units.

7.4 Land Environment

The waste water generated from the proposed project will be treated in the Effluent Treatment Plant to comply with the SPCB standards and will be used for dust suppression, ash conditioning and for greenbelt development. All the required Air emission control systems will be installed and operated to comply with SPCB norms. Solid wastes will be disposed off as per norms. Extensive greenbelt will be developed in the plant premises. Desirable beautification and landscaping practices will be followed. Hence there will not be any impact due to the proposed project.

Table 7.2 - Solid waste generation and its management

S.No.	Waste	Quantity (TPA)	Proposed method of disposal
1.	Ash from DRI	11,286	Will be given to Cement Plants & Brick manufacturers.
2.	Dolochar	18,180	Will be used in FBC power plant as fuel.

S.No.	Waste	Quantity (TPA)	Proposed method of disposal
3.	Kiln Accretion Slag	564	Will be used in road construction & given to brick manufacturers.
4.	Wet scrapper sludge	2,884	Will be used in road construction & given to brick manufacturer.
5.	SMS Slag	16,500	Slag from SMS will be crushed and iron will be recovered & then remaining non -magnetic material being inert by nature will be used as sub base material in road construction.
6.	End Cuttings from Rolling Mill	5,700	Will be reused in the SMS
7.	Mill scales from Rolling Mill	1,800	Mill scales will be given to nearby Ferro alloys manufacturing units or casting units.
8.	Ash from Power Plant (with Indian Coal + dolochar)	27,000	Ash generated is being given to Cement Plants / Brick Manufacturers.
9.	Ash from Power Plant (with imported Coal + dolochar)	17,280	Ash generated is being given to Cement Plants / Brick Manufacturers.

7.5 Greenbelt Development

9.106 Ha. of land is earmarked for greenbelt development in the proposed project. 15 m wide greenbelt will be developed all around the plant.

7.6 Cost for Environment Protection

Capital Cost for Environment Protection for proposed plant : Rs. 7.0 Crores

Recurring Cost per annum for Environmental protection : Rs. 1.2 Crores

7.7 Implementation of CREP Recommendations

All the CREP recommendations will be strictly followed.